COLORADO RIVER RECOVERY PROGRAM **Project No.: 129**
FY-2008 PROPOSED SCOPE-OF-WORK for:
Population estimate of humpback chub in
Desolation/Gray Canyon, Green River, Utah

Lead Agency: Utah Division of Wildlife Resources
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Category:
___ Ongoing project
_X_ Ongoing-revised project
___ Requested new project
___ Unsolicited proposal

Expected Funding Source:
_X_ Annual funds
___ Capital funds
___ Other (explain)

I. Title of Proposal:

Population estimate of humpback chub in Desolation/Gray Canyon, Green River, Utah

II. Relationship to RIPRAP:

General Recovery Program Support Action Plan
V. A. 1. Conduct Standardized Monitoring Program

III. Study Background/Rationale and Hypotheses:

In 2002, the RIP set recovery goals for the endangered humpback chub. Recovery goals are based in part on maintaining populations of humpback chub in several locations, among which is the Desolation/Gray canyon population on the Green River. Setting, maintaining, and monitoring a population necessitates obtaining accurate population estimates. Trend monitoring (ISMP) has been conducted annually since 1991. A five-year study on humpback chub reproduction and habitat use 1992-1996 was completed (Chart and Lentsch, 1999) as part of the Flaming Gorge studies. However, catch rates were variable and recapture rates low, so a good population estimate could not be produced. An estimate using those data was made by Ron Ryel and Rich Valdez (Recovery Goals 2002).

A three-year population estimate was conducted for the Desolation/Gray Canyon humpback chub population estimate during 2001-2003. Program Capture (M_t model) was utilized to calculate population estimates for each of the three years (2001: $733 \leq 1{,}254 \leq 2{,}697$; 2002: $1{,}477 \leq 2{,}612 \leq 8{,}509$; 2003: $636 \leq 937 \leq 1{,}520$), with respective profile likelihood intervals (Jackson et al. *draft*). Through the three years of this Desolation/Gray Canyon humpback chub population estimate, the probability of capture (*p*-hat) increased slightly and the coefficient of variation (CV) decreased (2001: *p*-hat=0.054, CV=0.31; 2002: *p*-hat=0.045, CV=0.36; 2003: *p*-hat=0.083, CV=0.21; Jackson et al. *draft*). Slight revision of the previous approach should further increase the probability of capture and decrease the coefficient of variation through an increase effort using multiple techniques.

The recovery goals require that subsequent population estimates for Desolation/Gray Canyon humpback chub be conducted in two out of every four years. This population estimate will meet this direction and provide for six separate point estimates within an eight year time period. Information collected previously by the Utah Division of Wildlife Resources-Moab Field Station and recommendations from the USFWS population estimate workshops 2002 and 2004 are incorporated into the approach to provide the best opportunity of determining the most accurate and precise estimate for the Desolation/Gray Canyon humpback chub population

IV. Goals, Objectives, End Product:

Goal: to estimate the population size of humpback chub in Desolation/ Gray Canyon with confidence intervals of less than 20%.

Objectives:

1) to obtain a population estimate of late juvenile/adult humpback chub for Deso/Gray.

2) to determine mean estimated recruitment of naturally produced subadult humpback chub (150-199 mm) in Desolation/Gray Canyon

V. Study area:
Desolation/Gray Canyons on the Green River, Utah. Specifically, twelve sites including four long-term trend sites in Desolation/Gray Canyon (RM 184.4, 174, 160, and 145) were sampled. Sites previously sampled during either ISMP or during the 2001-2003 population estimate will be included (RM 182, 166.5, and 148.8, etc.).

VI. Study Methods/Approach:

Study methods will be similar to those used in the previous population estimate (Chart and Lentsch 1999, Jackson et al. *draft*) and in the Westwater Canyon population estimate (Hudson et al. 2003, in progress). Before sampling began, we refined the sampling design and population estimate to include further changes from the direction that came from the summary of the 2004 population estimate workshop. We believe a more rigorous sampling design than that used in the previous study (Jackson et al. *draft*) may be required to produce an estimate with confidence levels less than 20%.

Three sampling trips were made in September and October 2006-2007, with intervals of 1-2 weeks between sampling. .

Capture-recapture data will be used to generate population estimates in program CAPTURE. A population estimate will be calculated using the most appropriate model most suitable for the sampling methods used.

VII. Task Description and Schedule (FY-2008):

Complete final report describing population size and structure of humpback chub in Deso/Gray; winter, spring, summer 2008. Draft report June 30, 2008. Final Report, August 15, 2008.

VIII. FY2008 Work

Draft final report to peer reviewers and Biology Committee - June 30, 2008
Final report to Biology Committee - August 15, 2008

Budget FY-2008:

Personnel:

Project Leader @ $449/day for 30 man days	$	13,470
2 Biologist @ $349/day for 10 man days	$	3,490

Technicians @ 200/day for 15 man days	$	3,000
Statistician @ 320/day for 2 man days	$	640
TOTAL	**$**	**20,600**

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FY 2008 Work

1. Deliverables/due dates: Draft Final Report to peer reviewers and B iology Committee – June 30, 2008
2. Budget: 20,600

IX. Program Budget Summary

FY-2008	$20,600
FY-2009	$ 0
Total	$20,600

X. Reviewers

XI. References

Chart, T.E. and L. Lentsch. 1999. Reproduction and recruitment of *Gila* spp. and Colorado pikeminnow (*Ptychocheilus lucius*) in the middle Green River 1992-1996. Report C in Flaming Gorge Studies: Reproduction and Recruitment of *Gila* spp. and Colorado pikeminnow in the middle Green River. Final Report. Recovery Implementation Program Project #39.

Jackson, J.A. and J. M. Hudson. 2005. Population Estimate for Humpback Chub (Gila cypha) in Desolation and Gray Canyons, Green River, Utah 2001-2003. Upper Colrado River Endangered Fish Recovery Program. Draft Report. Recovery Implementation Project #22k.